Tuberculosis Control

Annual Report 2001

BC Centre for Disease Control

Excellence Program

2000 Silver Level Recipient

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foreword

Dr. R.K. Elwood, Director

This report presents selected statistical and epidemiological information about tuberculosis in the province of British Columbia derived from the activities of the Division of Tuberculosis Control, BC Centre for Disease Control for the calendar year 2001.

The information contained in this report is wholly derived from statistics kept by the Registry in the Division of Tuberculosis Control. The care of those on reserve is administered by the Federal Government through Medical Services, Pacific Region, Health Canada who contract with the Division of Tuberculosis Control for this service. All aboriginals living off reserve are the responsibility of the provincial Ministry of Health Services.

The Division of Tuberculosis Control activities in the province of British Columbia are centralized and a nominal registry of all active cases of tuberculosis is maintained in the Division. Although tuberculosis is a notifiable disease, the Division of Tuberculosis Control is informed of cases from several sources including directly from the Laboratory Services of the BC Centre for Disease Control and through Pharmacy Services of BC Centre for Disease Control which is responsible for dispensing all anti-tuberculosis medication throughout the province. These additional reporting mechanisms help to ensure the Division of Tuberculosis Control is advised of all active and suspect tuberculosis treated in the province of British Columbia. The 2001 Annual Report is offered with high degree of confidence in its accuracy.

The 2001 Annual Report includes details of in-patient treatment of tuberculosis patients which is not directly administered by the Division of Tuberculosis Control. TB cases diagnosed between January 1, 2001 and December 31, 2001 for whom data were entered, up to April 2002, in the database were included in the analysis. Incidence rates (IR) of TB in British Columbia as a whole and in each health region were calculated, as were age specific rates. Population figures were based on the information provided by Statistics Canada (Statistics Canada, Population section, B.C. Stats, Ministry of finance and Corporate Relations).

The care of these patients is carried out by TB Ward, Vancouver General Hospital and Health Sciences Centre and is run by the Division of Respiratory Medicine.

Dr. R.K. Elwood, M.B., MRCP(UK), FRCP(C)
Provincial Director
Division of Tuberculosis Control

executive summary

Active cases:

In 2001 there were 391 cases of active tuberculosis reported in British Columbia. The provincial incidence rate was 9.5×10^{-5} which represents 15% and 35% increase in the rate of reported cases compared to 1999 and 2000, respectively.

Rates for the various Health Regions vary across the province. The Vancouver, Richmond, Burnaby, South Fraser Valley Health Regions continue to have rates exceeding the provincial rate. The majority of cases numerically are reported from these Heath Regions (279 cases (71%). The rates in the Downtown Eastside were 85.5×10^{-5} (58.1×10^{-5} in 2000) and 35.8×10^{-5} (23.2×10^{-5} in 2000) in Midtown of Vancouver. The rate for the city of Vancouver was 25.0×10^{-5}.

The average age was 50 years with both genders equally represented (M=198 vs F=193). Compared to 2000, there was a greater increase in TB rates among those aged 30 or more. The age-specific rates show a peak from age 25-39, rising again after age 60.

Rates of tuberculosis among registered aboriginals living on and off reserve remains high at 32.2×10^{-5} (19.9×10^{-5} in 2000).

Non-registered aboriginals were identified as a high-risk group. The highest proportion of HIV infection was observed among non-registered aboriginals. Four out of seven (57%) of those with tuberculosis in this group died with tuberculosis stated to be the principal or contributing cause of death.

Multiple drug resistance was found in 5 cases, 4 of whom were foreign born. No case of drug resistance was found among aboriginal cases. The commonest resistance was to Isoniazid (4%, n=16).

Ninety percent of cases received self-administered treatment. In April 2002, 70% (n=274) of cases diagnosed in 2001 were still on treatment. Excluding those who either died or moved out of province, 94% completed their treatment satisfactorily.

Preventive Therapy:

In 2001, 1063 patients were placed on preventive therapy for latent tuberculosis infection. The completion rate for preventive therapy was just over 50% and there was no difference between self-administered treatment and fully supervised preventive therapy. The commonest causes of non-completion were drug reactions, followed by poor compliance.

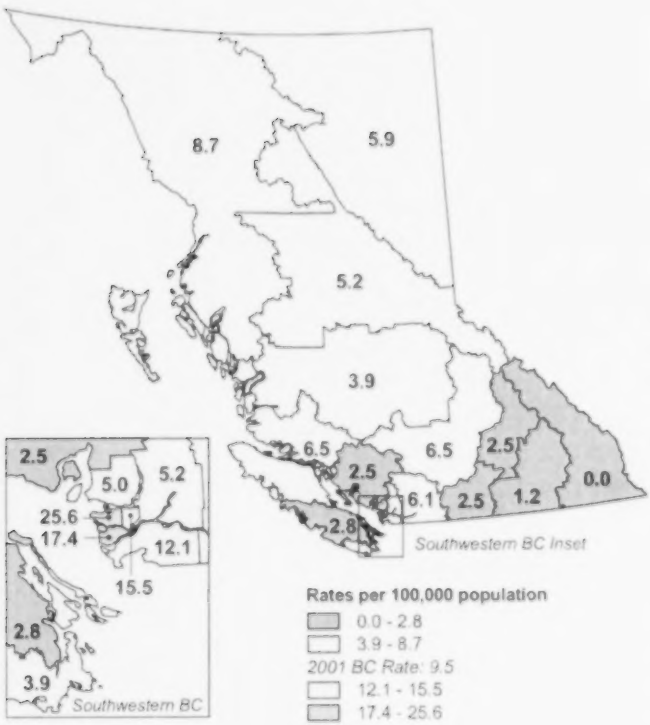
Contacts:

In 2001, 3864 contacts were examined 623 of whom were household contacts and 2744 were close non-household contacts. Further investigation identified 9 and 5 active cases among household and close non-household contacts, respectively.

Admission:

During 2001 there were 73 patients admitted to the TB Ward, Vancouver General Hospital and Health Sciences Centre corresponding to 67 admissions and 6 re-admissions. The majority were admitted for Treatment of active pulmonary tuberculosis.

Tuberculosis Active Cases 2001



HR	Health Region	Cases	Rate
1	East Kootenay	0	0.0
2	West Kootenay - Boundary	1	1.2
3	North Okanagan	3	2.5
4	South Okanagan - Similkameen	6	2.5
5	Thompson	9	6.5
6	Fraser Valley	15	6.1
7	South Fraser Valley	70	12.1
8	Simon Fraser	17	5.2
9	Coast Garibaldi	2	2.5
10	Central Vancouver Island	7	2.8
11	Upper Island/Central Coast	8	6.5
12	Cariboo	3	3.9
13	North West	8	8.7
14	Peace Liard	4	5.9
15	Northern Interior	7	5.2
16	Vancouver	150	25.6
17	Burnaby	30	15.5
18	North Shore	9	5.0
19	Richmond	29	17.4
20	Capital	13	3.9

Incidence rates

From January 1st, 2001 to 31, December 2001, 391 new cases of TB were diagnosed in B.C. The provincial incidence rate of TB was 9.5×10^{-5} which represents 15% (p-value=0.02) and 35% (p-value=0.0002) increase in the rate of reported cases compared to 1999 and 2000, respectively..

Health units:

Rates for various health regions vary across the province. The highest incidence rate was observed in Vancouver (25.6×10^{-5}) and Richmond (17.4×10^{-5}) while the lowest incidence rates occurred in East and West Kootenays (0.0 and 1.2×10^{-5}, respectively) (Figure 1). Thirty-eight percent (n=150) of cases lived in Vancouver and 18% (n=70) in South Fraser Valley. The Vancouver, Richmond, Burnaby and South Fraser Valley health boards had rates exceeding the provincial rate of 9.5×10^{-5}. Compared to 2000, rates increased in all regions except Central Vancouver Island, Cariboo, Northern Interior, East Kootenay and Capital. Those health units with the highest increase in rates were: Peace Liard (0 vs 5.9), Upper Island/Central Coast (0 vs 6.5), Thompson (1.5 vs 6.5), North West (2.2 vs 8.7) and North Okanagan (0.8 vs 2.5).

Figure 1. Tuberculosis incidence rates per 100,000 by health region, 2000-2001, B.C.

	EK	WK/B	NO	SO	TH	FV	SFV	SF	CG	CVI	UVI/C	CA	NW	PL	NI	VAN	BBY	NS	RICH	OR
TB cases 2001	0.0	1.0	3.0	6.0	9.0	15.0	70.0	17.0	2.0	7.0	8.0	3.0	8.0	4.0	7.0	150.0	30.0	9.0	29.0	13.0
TB Rates 1999	1.2	2.4	2.5	2.2	0.7	3.3	8.6	9.4	2.5	2.1	3.3	9.1	2.2	6.0	4.5	24.4	13.7	5.6	7.3	4.8
TB Rates 2000	1.2	1.2	0.8	2.1	1.5	5.8	8.7	3.7	2.5	3.3	0.0	5.2	2.2	0.0	6.0	18.6	13.5	2.2	15.7	5.1
TB Rates 2001	0.0	1.2	2.5	2.5	6.5	6.1	12.1	5.2	2.5	2.8	6.5	3.9	8.7	5.9	5.2	25.6	15.5	5.0	17.4	3.9

Incidence rates, Vancouver's subunits

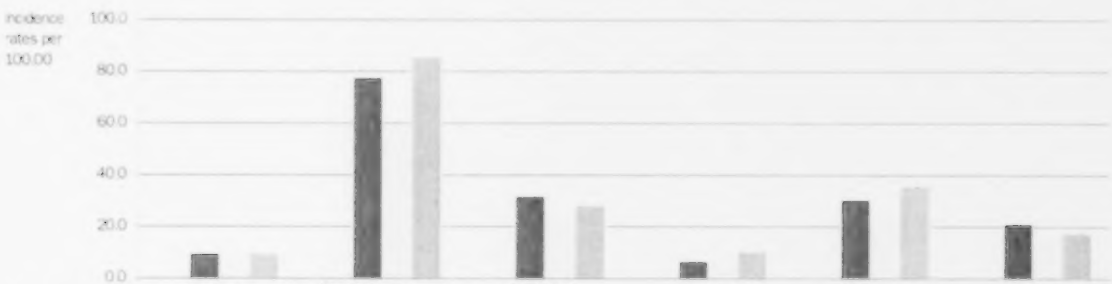
Subunits:

The incidence rate of TB was 85.5×10^{-5} in Downtown Eastside. Among those diagnosed in Vancouver, 31% (n=46) were diagnosed in Downtown Eastside and 21% (n=31) in Midtown. Compare to 2000, rate of TB increased in all Vancouver's subunits (Figure 2).

Clinics:

More than half of the cases visited TB Control Vancouver clinic (55%, n=216) and 23% (n=90) of cases attended TB Control New Westminster clinic.

Figure 2. Tuberculosis incidence rates per 100,000 in Vancouver's subunits, 1999-2001, B.C.

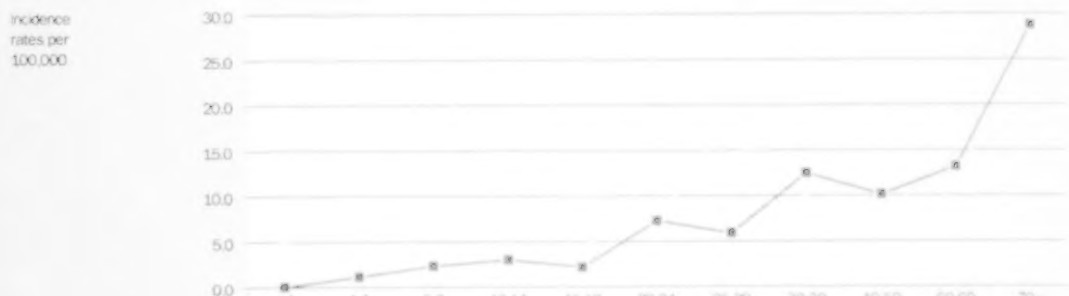


	City Centre	Downtown Eastside	North East	Westside	Midtown	South
TB cases 2001	10.0	46.0	27.0	13.0	31.0	21.0
TB rates 1999	9.5	77.7	31.7	6.5	30.4	21.1
TB rates 2000	9.2	58.1	23.0	5.7	23.2	15.2
TB rates 2001	9.6	85.5	28.2	10.4	35.8	17.5

General description of active cases

The average age was 50 years (Median=47). Both genders were equally represented (M=198 vs F=193). Compared to 2000, age specific rates increased more among those aged ≥30 years. However, fluctuation of the incidence rates differed according to gender. In females, the rate of TB increased in all age group (specially, 20-29 years old) while for men this rate decreased for almost all age groups except 30-39 years and 60+ years. In those aged 15-29 years, the rate was significantly higher in women than in men (11.0 vs 5.1, p-value=0.005). Beyond this age, this rate was higher in men (13.6 vs 11.0, p-value=0.07) (Figure 3).

Figure 3. Tuberculosis incidence rates by age and gender, 2001, B.C.



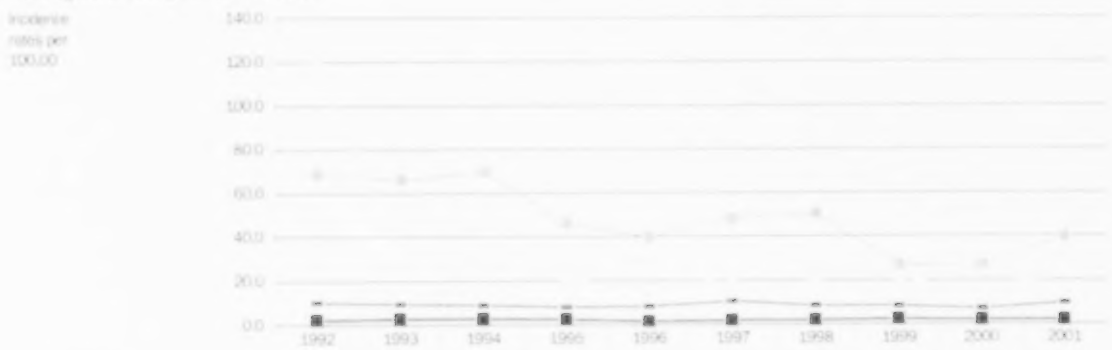
	< 1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60-69	70+
Tuberculosis cases – female	1.0	1.0	0.0	3.0	5.0	17.0	22.0	32.0	48.0	23.0	41.0
Tuberculosis cases – male	0.0	1.0	3.0	4.0	3.0	10.0	8.0	41.0	60.0	21.0	47.0
TB rates – female	5.1	1.2	0.0	2.4	3.8	12.6	16.2	9.8	8.1	14.1	18.4
TB rates – male	0.0	1.1	2.3	3.0	2.1	7.3	5.9	12.5	10.1	13.2	28.7

Demographics

Seventy one percent (n=279) of subjects were foreign born and 14% (n=53) were Canadian born, of whom 7 were non-registered aboriginal. Nine percent of cases (n=36) were registered aboriginals of whom 22 were living off reserve and 14 living on reserve. Figure 4 shows that the incidence rate of TB in 2001 was increased only among aboriginals and foreign born.

Figure 4. Tuberculosis incidence rates per 100,000, by birthplace and year, B.C.

** Non-registered aboriginal were included.*



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Foreign born	29.8	29.9	25.3	26.1	29.1	35.8	25.4	27.2	24.0	29.3
Canadian born*	2.3	2.7	2.7	2.5	1.5	1.8	1.9	2.3	1.8	1.8
Aboriginal, registered, on reserve	119.8	31.9	29.7	21.0	15.3	21.9	23.0	21.2	15.9	24.8
Aboriginal, registered, off reserve	68.5	66.0	69.5	46.1	39.9	48.1	50.2	26.9	26.9	39.7
Provincial rate (B.C.)	10.1	9.6	9.0	8.2	8.4	10.5	8.5	8.3	7.1	9.5

HIV status

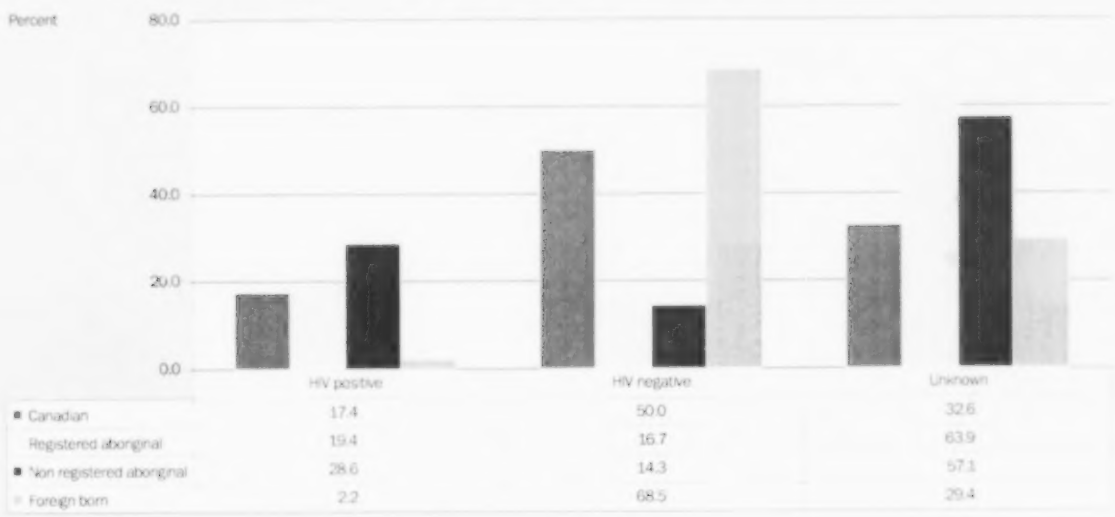
HIV status was unknown for 36% (n=141) of active cases. Twenty-three percent (n=90) claimed to have been tested and reported negative but laboratory confirmation was not available. One hundred and sixty (41%) of patients with active disease were tested for HIV infection and 24 (6%) were recorded as positive.

Among subjects 2% (n=6) were classified in the high-risk group for HIV.

Among non-registered aboriginals 28.6% were HIV positive while this proportion was 2.2% in foreign born, 17.4% in Canadian and 19.4% in registered aboriginals (28.6% vs 2.2%-19.4%, p-value=0.01-0.6) (Figure 5).

Figure 5. HIV status of tuberculosis cases by birthplace, 2001, B.C.

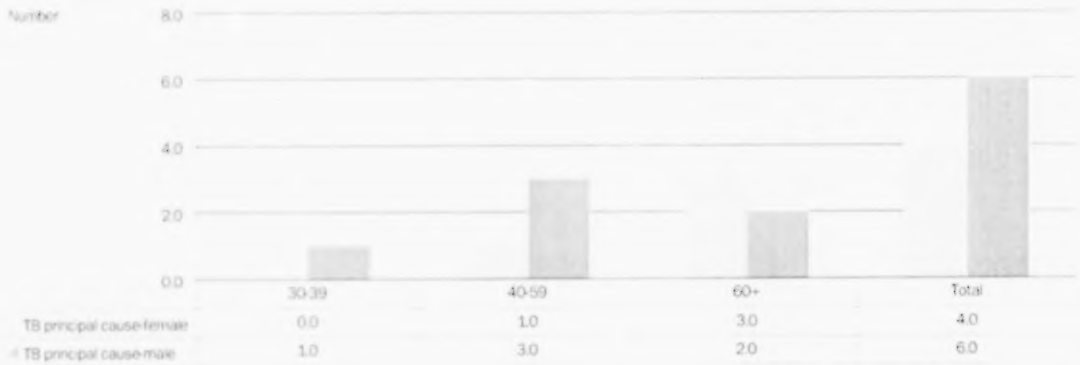
** In this figure HIV negative is based on laboratory result or by self-reported claim of previous negative test.*



Mortality

Forty-one (1%) cases died during 2001, all of them were 30 years or older (Figure 6). For 10 cases TB was the principal cause of death and 3 were notified after death. For 18 cases TB was a contributing cause of death and 1 was notified after death. Death for 6 cases was considered not to be related to tuberculosis of this latter group 2 were notified after death. The cause of death for 7 cases was not available.

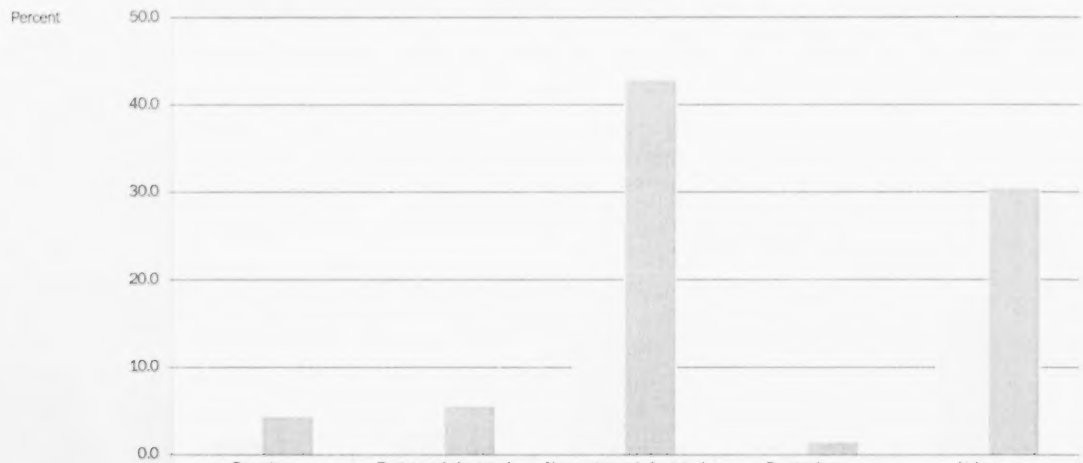
Figure 6. Number of deaths among tuberculosis cases by age, 2001, B.C.



Mortality

Death due to tuberculosis varied according to the birthplace. In 2% of the deaths among foreign born and 57% of the deaths among non-registered aboriginals, tuberculosis was considered to be the principal or contributing cause of death (Figure 7).

Figure 7. Death by birthplace, 2001, B.C.



	Canadian	Registered aboriginal	Non registered aboriginal	Foreign born	Unknown
TB principal cause	2.2	2.8	14.3	1.1	17.4
TB contributing cause	4.3	5.6	42.9	1.4	30.4

Reactivation and type of disease

Diagnosis process:

Seventy-eight percent (n=305) of cases were diagnosed after MD referrals, 6% (n=22) because of contact investigation, 6% (n=22) because of immigration surveillance/referral and 5% (n=21) were self-referrals. Eighty-six percent of cases (n=336) were newly diagnosed. Three percent (n=11) were diagnosed outside Canada.

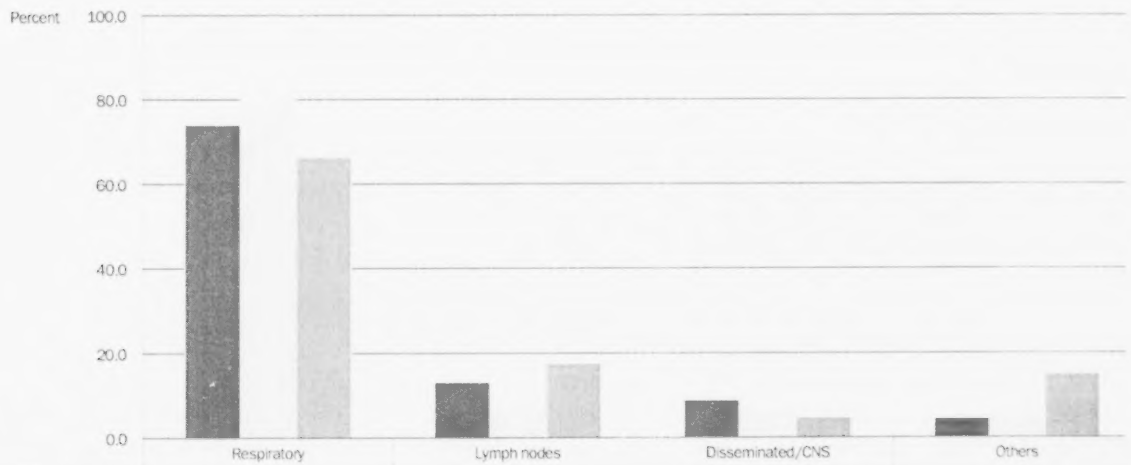
Forty-four cases (11%) had a reactivation of TB of whom 6 had been treated in B.C. Eleven were reactivation of presumed inactive TB (type II reactivation) and 33 were reactivation of previously documented treated TB (type I reactivation). The majority of reactivations were in pulmonary sites (n=36, 82%). Most Extra pulmonary reactivations were in lymph nodes (n=3). Six cases with TB reactivation (all were type I) had resistance to TB medications. Resistance to one of the three principal medications for TB (INH, PZA, RM) was identified in 4 cases and multiple drug resistance (resistance to INH and RM) was found in 2 cases.

Type of TB:

Pulmonary TB was the commonest type of TB (68%, n=267). Extra pulmonary TB accounted for 25% (n=97) and 7% (n=27) had both pulmonary and extra pulmonary involvement. Most frequent types of extra pulmonary TB were lymph node involvement (48%, n=59). There were 21 cases of disseminated TB (17%). Lymph node involvement was more frequent in foreign born compared to others (Figure 8). Lymph node involvement was found in 17.6% of foreign born compared to 7.0%/13.0% of aboriginals / Canadians.

Eighty-seven percent (n=340) of cases were bacteriologically confirmed and 43% (n=169) of these were positive on both smear and culture. Bacillary status did not differ by gender (84% vs 90%, p-value >0.05).

Figure 8. Type of TB by birthplace, 2001, B.C.



	Respiratory	Lymph nodes	Disseminated/CNS	Others
Canadian born	73.9	13.0	8.7	4.3
Aboriginal	81.4	7.0	7.0	4.7
Foreign born	66.3	17.6	4.7	15.1

Resistance and treatment

Resistance to anti TB medication:

Resistance to at least one of the three principal medications for TB (INH, PZA, RM) was identified in 5% (n=19) of the cases, all were ≥10 years old. Commonest resistance was to Isoniazid (4%, n=16). Multiple drug resistance (resistance to INH and RM) was found in 5 cases, 4 of them were foreign born (1.4% vs 0.9%, p-value=0.99) (Figure 9).

Borderline resistance to at least one anti-tuberculosis medication was observed in 7 cases.

Drug resistance of any kind was 4.5 times more frequent in foreign born than others (9% vs 2%, p-value=0.02). No case of drug resistance was found in aboriginals.

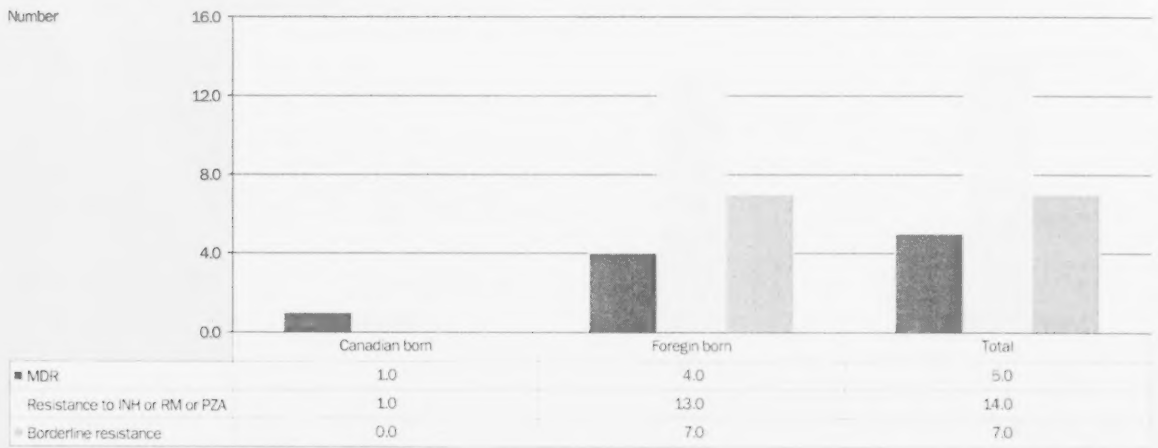
Treatment:

Seventy-five percent (n=292) of cases were treated in the community, 13% (n=49) were treated at the General hospital and 6% (n=25) were treated in TB ward. About 10% (n=40) of cases were placed on directly observed treatment.

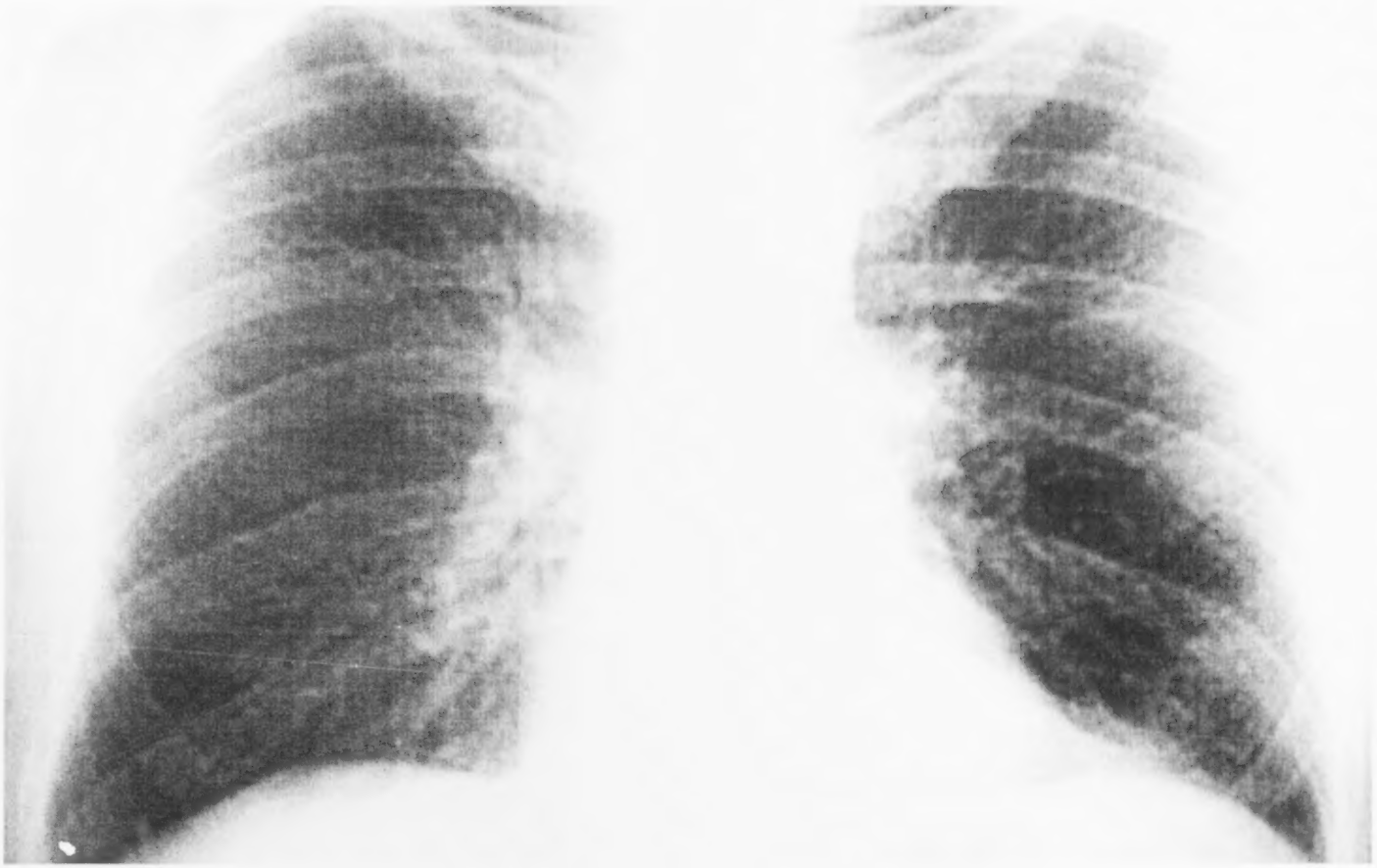
For 85% (n=334) of cases the prescribed drug regimen included standard treatment for TB (INH, PZA, RM).

Up to April 2002, 70% (n=274) of cases diagnosed in 2001, were still on treatment and 30% (n=117) of cases had discontinued treatment. The reasons for stopping treatment, in decreasing order of frequency, were: completion of treatment (54%, n=63), death (35%, n=41) and moving to other provinces (9%, n=10). Excluding those who either died or moved out of province, 94% completed their treatment satisfactorily.

Figure 9. Drug resistance by birthplace, 2001, B.C.



Latent Tuberculosis Infection 2001



Latent tuberculosis infection

Rates:

In 2001, 1063 patients were placed on preventive therapy for latent tuberculosis infection. Overall the rate of prophylaxis was 26×10^{-5}/year, in British Columbia.

The frequency of prophylaxis was higher in Vancouver health region (34%, n=361) and South Fraser Valley (10%, n=106) (Figure 10). Compared to West Kootenay-Boundary, the rate of prophylaxis was about 62 times higher in the Vancouver health region (62 vs 1).

Figure 10. Rates of preventive therapy per 100,000 by health region, 2001, B.C.

	EK	WK/B	NO	SO	TH	FV	SFV	SF	CG	CVI	LVI/C	CA	NW	PL	NI	VAN	BBY	NS	RICH	CR	Yuk
Prophylaxis numbers	4.0	1.0	13.0	22.0	17.0	45.0	106.0	50.0	3.0	48.0	24.0	13.0	35.0	9.0	32.0	361.0	57.0	54.0	71.0	88.0	10.0
Prophylaxis rates	4.8	1.2	10.7	9.2	12.3	18.4	18.3	15.4	3.7	19.4	19.6	16.7	38.0	13.3	23.8	61.7	29.4	30.0	42.6	26.2	33.5

Latent tuberculosis infection

Overall, 358 individuals were put on preventive therapy in Vancouver. Mid Town Vancouver (25%, n=89) and South Vancouver (23%, n=84) included half of these subjects.

The rate of prophylaxis was 102.7×10^{-5}/year for Vancouver Mid Town, 87.4×10^{-5}/year for Down Town Eastside and 75.3×10^{-5}/year for Vancouver North East.

Figure II. Rates of preventive therapy per 100,000 in Vancouver's subunits, 2001, B.C.

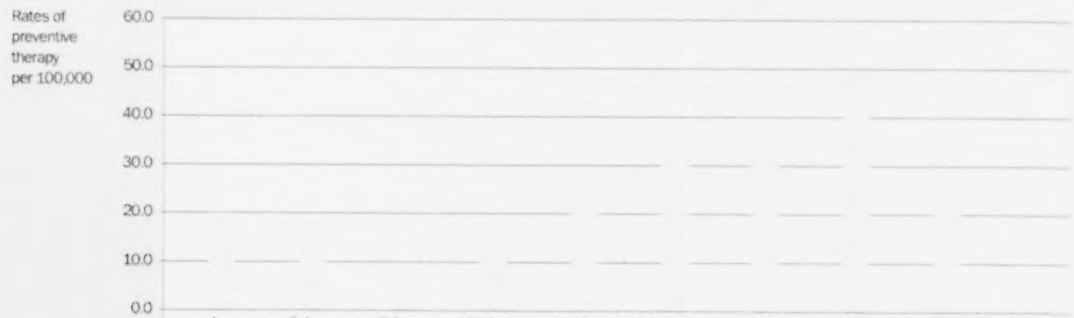
	City Centre	Downtown Eastside	North East	Westside	Midtown	South
Prophylaxis numbers	28.0	47.0	72.0	38.0	89.0	84.0
Prophylaxis Rates	26.8	87.4	75.3	30.4	102.7	70.1

Demographic characteristics

Females represented 57.4% (n=610) of subjects. Rate of prophylaxis was highest among subjects aged 30-39 years old and lowest among those aged 5-9 and (60 years old (49.6 vs 6.4 and 7.6) (Figure 12).

Sixty-five percent (n=691) of subjects were foreign born and 20.9% (n=223) were Canadian born. Registered aboriginals accounted for 11.8% (n=125) of subjects. The rate of prophylaxis was estimated to be $112x10^{-5}$/year for registered aboriginal, $72x10^{-5}$/year for foreign born and $7x10^{-5}$/year for Canadian. Based on the laboratory result, 1% (n=14) of subjects were HIV Positive.

Figure 12. Rates of preventive therapy per 100,000 by age, 2001, B.C.



	<1	0-4	5-9	9-14	15-19	20-24	25-29	30-39	40-59	60+
Prophylaxis numbers	8.0	33.0	16.0	32.0	67.0	102.0	108.0	325.0	318.0	54.0
Prophylaxis Rates	19.8	19.0	6.4	12.2	24.7	37.4	39.8	49.6	26.7	7.6

Reasons for prophylaxis and treatment

Reasons for prophylaxis:

The reasons for prophylaxis were: positive tuberculin test 42% (n=444), positive tuberculin test and contact with a TB case 28% (n=298), radiological evidences of inactive TB 19% (n=203). HIV infection was the reason of prophylaxis for 1% (n=10) of subjects. Two percent (n=19) were immunocompromised for various reasons and had a positive tuberculin test.

Treatment:

Treatment was administered in outpatient facilities for almost all the subjects (99%, n=1054). Among subjects, all but 37 (3%) received non-supervised treatment.

INH, alone or combined with other medications, was prescribed for 96% (n=1022) of subjects. RM was prescribed for 3% (n=33).

Up to April 2002, 33% (n=346) of subjects were still on treatment. Of those who ended (n=717) their treatment, 50% (n=362) of subjects completed, 41% (n=292) did not complete their course of treatment. One subject died and for 62 the reasons were not available.

The commonest causes of non completion were drug reaction (40%, n=118), poor compliance (39%, n=114) and lost to follow-up (20%, n=59).

Duration of treatment was available for 705 out of 717 cases that ended their treatment. Among them 55% (n=389) were treated for 5 months or more.

Other Activities in 2001

Contact tracing

In 2001, 3864 contacts were examined of whom 623 were household and 2744 were close non-household contacts. For 497 subjects the type of contact was not available. Among the household contacts, 9 had active tuberculosis and 95 were diagnosed with latent TB and were placed on preventive therapy.

Of non-household contacts, 5 had active TB and 139 were diagnosed with latent TB, and were placed on preventive therapy. Of those with Unknown type of contact, 8 were placed on preventive therapy.

Skin test:

In 2001 19,084 TB skin tests were preformed in the province. 4673 were positive, 1675 were offered prophylaxis and 878 (52%) accept treatment for latent tuberculosis infection.

BCG vaccination:

Two hundred and ten BCG vaccinations were administered by aboriginal services. Ninety-one percent (n=191) were 3 months or younger at the time of vaccination. Two adverse reactions were reported which involved lymph node reactions.

Admission:

The designated TB ward is located at Vancouver Health Science Centre, VGH. This ward serves the whole province of B.C. and medical coverage is provided by the UBC Division of Respiratory medicine. In 2001 there were 73 admissions of whom 67 were admitted for the first time in TB ward. Six individual patients had a re-admission among them 3 were admitted twice in 2001.

The most frequent discharge diagnoses were active pulmonary TB (60%, n=44), suspect TB (26%, n=19) and active extra pulmonary TB (7%, n=5).

The 73 discharges spent a total of 3562 patient days on the TB ward. Fifty-one percent of patients stayed 1 month and 19% stayed 3 months or more. The average stay was 50 days (Median=30, Range:1 to 214). The majority (86%, N=63) of discharges were on medical advice.

Appendix 2001

Active cases

Demographic characteristics of active cases by age, 2001, B.C.

Age group Number of cases	< 1 N=1	1-4 N=2	5-9 N=3	10-14 N=7	15-19 N=8	20-24 N=27	25-29 N=30	30-39 N=73	40-59 N=108	60+ N=132	Total N=391
TB Cases – Female	1	1	0	3	5	17	22	32	48	64	193
TB Cases – Male	0	1	3	4	3	10	8	41	60	68	198
Female											
Total death	0	0	0	0	0	0	0	1	1	13	15
TB principal	0	0	0	0	0	0	0	0	1	3	4
TB contributing	0	0	0	0	0	0	0	0	0	8	8
Male											
Total death	0	0	0	0	0	0	0	4	6	16	26
TB principal	0	0	0	0	0	0	0	1	3	2	6
TB contributing	0	0	0	0	0	0	0	3	1	6	10

Bacillary status and type of TB

Bacillary status and type of TB by age group, active cases, 2001, B.C.

Age group Number of cases	< 1 N=1	1-4 N=2	5-9 N=3	10-14 N=7	15-19 N=8	20-24 N=27	25-29 N=30	30-39 N=73	40-59 N=108	60+ N=132	Total N=391
Gender											
Female	1	1	0	3	5	17	22	32	48	64	193
Bacillary	0	1	0	1	4	13	19	24	42	58	162
Unknown	1	0	0	2	1	0	3	5	3	3	18
Male	0	1	3	4	3	10	8	41	60	68	198
Bacillary	0	1	1	3	3	8	7	36	54	65	178
Unknown	0	0	2	1	0	1	0	0	3	1	8
Type of TB											
Pulmonary	1	0	3	7	7	20	17	51	64	97	267
Extra pulmonary	0	1	0	0	1	7	7	16	39	26	97
Both	0	1	0	0	0	0	6	6	5	9	27
Extra-pulmonary											
Lymph nodes	0	1	0	0	1	4	5	8	27	13	59
Disseminated/miliary	0	1	0	0	0	0	5	5	3	7	21
Bones and Joints	0	0	0	0	0	0	2	2	1	6	11
GUT	0	0	0	0	0	0	1	1	6	3	11
Peritonium/GIT	0	0	0	0	0	1	0	3	2	2	8
Meninges/CNS	0	0	0	0	0	0	0	0	3	1	4
Skin	0	0	0	0	0	0	0	1	1	1	3
Eye/Ear/Other	0	0	0	0	0	2	0	2	1	2	7

HIV status

HIV status, having HIV risk factor, drug resistance and case category by age, 2001, B.C.

Age group Number of cases	< 1 N=1	1-4 N=2	5-9 N=3	10-14 N=7	15-19 N=8	20-24 N=27	25-29 N=30	30-39 N=73	40-59 N=108	60+ N=132	Total N=391
HIV positive	0	0	0	0	0	1	2	16	4	1	24
Claimed HIV negative	0	1	3	3	1	5	6	17	27	27	90
HIV negative	0	0	0	1	1	18	14	22	35	45	136
Unknown	1	1	0	3	6	3	8	18	42	59	141
MDR	0	0	0	0	0	0	2	3	0	0	5
Resistant to INH or RM or PZA	0	0	0	1	0	1	1	6	2	3	14
Borderline resistance	0	0	0	0	0	1	0	3	1	2	7
New cases	1	2	3	7	8	26	27	62	91	109	336
Reactivation I	0	0	0	0	0	1	0	7	10	15	33
Reactivation II	0	0	0	0	0	0	0	0	4	7	11
Diagnosed outside Canada	0	0	0	0	0	0	3	4	3	1	11

Active cases by birthplace

Age group Number of cases	< 1 N=1	1-4 N=2	5-9 N=3	10-14 N=7	15-19 N=8	20-24 N=27	25-29 N=30	30-39 N=73	40-59 N=108	60+ N=132	Total N=391
Foreign born	0	0	0	3	3	22	27	52	76	96	279
Canadian	0	1	3	3	2	0	2	8	17	10	46
White	0	1	1	0	2	0	1	8	17	10	40
Others	0	0	2	3	0	0	1	0	0	0	6
Aboriginal	1	1	0	1	2	5	1	11	10	11	43
Registered	1	1	0	1	2	5	1	10	7	8	36
On reserve	1	1	0	1	1	2	0	0	2	6	14
Non registered*	0	0	0	0	0	0	0	1	3	3	7
Unknown	0	0	0	0	1	0	0	2	5	15	23

** Metis are included.*

HIV status and death by birthplace, 2001, B.C

	Canadian N=46	Registered aboriginal N=36	Non-registered aboriginal N=7	Foreign born N=279	Unknown N=23	Total N=391
HIV positive	8	7	2	6	1	24
Claimed HIV-	18	2	1	64	5	90
HIV negative	5	4	0	127	0	136
Unknown	15	23	4	82	17	141
Death	4	6	4	11	16	41
TB principal	1	1	1	3	4	10 *
TB contributing	2	2	3	4	7	18 **
TB not related	1	2	0	0	3	6 ¶
Unknown	0	1	0	4	2	7

** Among them 3 were notified after death.*

*** Of them 1 was notified after death.*

¶ Of them 2 were notified after death.

Resistance and case category

Resistance to anti TB medication by birthplace. 2001. B.C.

	Canadian N=46	Aboriginal registered N=36	Aboriginal non-registered N=7	Foreign born N=279	Unknown N=23	Total N=391
MDR	1	0	0	4	0	5
Resistance to INH or RM or PZA	1	0	0	13	0	14
Borderline resistance to at least one anti TB medication	0	0	0	7	0	7
Total	2	0	0	24	0	26

Case category by finding on previous x-ray. 2001. B.C.

	New	Reactivation I	Reactivation II	Diagnosed outside Canada	Total
Normal x-ray	29	1	0	0	30
No previous x-ray	281	0	0	8	289
Inactive TB	6	32	0	3	41
Presumed inactive TB	3	0	11	0	14
Pulmonary fibrosis	2	0	0	0	2
Old pleurisy	6	0	0	0	6
Healed primary complex	3	0	0	0	3
Broncho vascular changes	1	0	0	0	1
Others	5	0	0	0	5

Type of Tuberculosis by birthplace

	Canadian N=46	Aboriginal registered N=36	Aboriginal non-registered N=7	Foreign born N=279	Unknown N=23	Total N=391
Type of TB						
Respiratory	34	31	4	185	13	267
Non respiratory	7	4	1	78	7	97
Both	5	1	2	16	3	27
Extra-pulmonary						
Lymph nodes	6	3	0	49	1	59
Disseminated/Miliary	4	1	2	12	2	21
Bones and Joints	1	0	1	8	1	11
GUT	1	0	0	9	1	11
Peritoneum/GIT	0	0	0	7	1	8
Meninges/CNS	0	0	0	1	3	4
Skin	0	1	0	2	0	3
Eye/Ear/Other	0	0	0	6	1	7

Type of Tuberculosis

Positive laboratory result by type of TB, 2001, B.C.

	Positive laboratory result					Death	
	Only smear	Only culture	Smear and culture	Histology or pathology	Unknown	Principal cause	Contributing cause
Respiratory	4	83	139	4	17	4	12
Non-Respiratory	3	58	13	9	9	2	3
Both	1	9	17	0	0	4	3
Lymph nodes	2	41	6	4	2	0	0
Disseminated/Miliary	1	6	14	0	0	3	3
Bones and Joints	0	4	4	0	3	0	2
GUT	1	5	1	2	2	0	0
Peritonium/GIT	0	4	2	2	0	0	0
Meninges/CNS	0	2	1	0	0	3	0
Skin	0	2	1	0	0	0	0
Eye/Ear/Other	0	3	1	1	2	0	1

Place of treatment

Place of treatment by type of TB and laboratory result, 2001, B.C.

	Domiciliary	Hospital, TB ward	General hospital	Ex-province	Deceased	Unknown	Total
Respiratory							
Non bacillary	20	0	0	0	0	0	20
Only smear positive	3	1	0	0	0	0	4
Smear and culture positive	90	17	26	2	4	0	139
Only culture positive	68	2	8	1	4	0	83
Histology positive	0	0	0	0	0	0	0
Unknown	14	0	1	2	0	0	17
Pathology positive	4	0	0	0	0	0	4
Total	199	20	35	5	8	0	267
Non-respiratory							
Non bacillary	5	0	0	0	0	0	5
Only smear positive	3	0	0	0	0	0	3
Smear and culture positive	9	0	2	0	1	1	13
Only culture positive	52	0	4	0	2	0	58
Histology positive	1	0	0	0	0	0	1
Unknown	6	0	0	3	0	0	9
Pathology positive	7	0	1	0	0	0	8
Total	83	0	7	3	3	1	97
Both							
Non bacillary	0	0	0	0	0	0	0
Only smear positive	0	1	0	0	0	0	1
Smear and Culture positive	7	3	4	1	2	0	17
Only culture positive	3	1	3	0	2	0	9
Histology positive	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0
Pathology positive	0	0	0	0	0	0	0
Total	10	5	7	1	4	0	27

Contact tracing

Outcomes of contact tracing by the type of TB and bacillary status of the source case and the type of contact, 2001, B.C.

Bacillary status of the source case	Respiratory			Non-respiratory			Unknown		
	Household N=532	Close non household N=2582	Unknown N=472	Household N=62	Close non-household N=91	Unknown N=23	Household N=29	Close non-household N=71	Unknown N=2
Positive smear	378	2342	431	24	57	23	–	–	–
TBN positive	155	513	37	7	18	0	–	–	–
Active	8	5	0	0	0	0	–	–	–
Prophylaxis	59	111	7	4	5	0	–	–	–
Positive only in culture	128	206	41	38	27	–	–	–	–
TBN positive	43	53	4	12	10	–	–	–	–
Active	0	0	0	0	0	–	–	–	–
Prophylaxis	22	19	0	4	3	–	–	–	–
Pathology positive/ Histology positive	6	3	–	–	–	–	–	–	–
TBN positive	3	0	–	–	–	–	–	–	–
Active	0	0	–	–	–	–	–	–	–
Prophylaxis	1	0	–	–	–	–	–	–	–
Non-bacillary	13	3	–	–	7	–	–	–	–
TBN positive	9	0	–	–	0	–	–	–	–
Active	0	0	–	–	0	–	–	–	–
Prophylaxis	3	0	–	–	0	–	–	–	–
Unknown	7	28	–	–	–	–	29	71	2
TBN positive	2	6	–	–	–	–	10	10	1
Active	0	0	–	–	–	–	1	0	0
Prophylaxis	1	1	–	–	–	–	1	0	1

admission

Tuberculosis admission by the duration of stay (month), 2001, B.C.

	Duration of stay (month)								
	0-1 n=37	1-2 n=13	2-3 n=7	3-4 n=6	4-5 n=4	5-6 n=3	6+ n=1	Unknown n=2	Total N=73
Active Pulmonary	22	8	3	5	3	1	1	1	44
Active extra-pulmonary	1	3	1	0	0	0	0	0	5
MOTT	3	0	1	0	0	0	0	0	4
Other	1	0	0	0	0	0	0	0	1
Suspect	10	2	2	1	1	2	0	1	19
Total	37	13	7	6	4	3	1	2	73

contact information

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